

GHOST ARTIFACT CANCELLATION USING PHASED ARRAY PROCESSING

ABSTRACT

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A ghost artifact cancellation technique is disclosed. Phased array combining is used to cancel ghosts caused by a variety of distortion mechanisms, including space-variant distortions, such as local flow or off-resonance. The technique uses a constrained optimization that optimizes signal-to-noise ratio (SNR) subject to the constraint of nulling ghost artifacts at known locations. In one aspect multi-coil, k-space data is passed through a converter to convert the k-space data to image domain. After the conversion, the images contain ghost artifacts. The images are then passed through one or more phased array combiners. Each phased array combiner separates the superimposed ghosts to produce an image without ghosts. These images may then be aligned by means of shifting and combined by a variety of means to improve the final image quality. In another aspect, the phase encode order is varied in time to produce ghosts with time varying phase. The series of images are then used to adaptively compute the phased array combiner and output combiner coefficients. The developed technique may be used with phase encode orders which reduce image distortion.

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